

**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:)	Confirmation No.: 2259
)	
Medford Alan DYER)	Group Art Unit: 2681
)	
Serial No.: 10/715,001)	Examiner: Smith, Sheila B.
)	
Filed: November 17, 2003)	
)	
For: PORTABLE SPEAKERPHONE WITH)	
PIVOTING MICROPHONE BOOM)	
)	

APPEAL BRIEF UNDER 37 CFR § 41.37

Mail Stop APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Applicant submits this Appeal Brief pursuant to the Notice of Appeal filed May 1, 2007.

This brief is submitted in triplicate.

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I. REAL PARTY IN INTEREST

The real party in interest is the assignee GN Netcom.

II. RELATED APPEALS AND INTERFERENCES

To the best of Applicant's knowledge, there are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-28 are pending. Claims 1-28 are rejected, and are appealed. Claims 1, 3, and 22 are independent claims.

IV. STATUS OF AMENDMENTS

Response After Final was filed on February 12, 2007, in which no claim was amended.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present section of the Appeal Brief is set forth merely to comply with the requirements of 37 C.F.R. § 41.37(c)(v) and is not intended to limit the pending claims in any way.

Claim 1 recites:

A speakerphone comprising:
a housing;
a speaker coupled to said housing;
a microphone boom pivotably coupled to said housing, said microphone boom having at least a first position and a second position; and
a microphone mounted to said microphone boom;
wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in either said first position or said second position.

Claim 3 recites:

A speakerphone comprising:
a housing;
a speaker mounted to said housing;
a unidirectional microphone;
a microphone boom pivotably coupled to said housing, said microphone boom capable of being placed at a plurality of positions, said unidirectional microphone mounted at a distal end of said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in any of said plurality of positions; and
a wireless networking module adapted to transmit first signals via a short distance wireless network to a peripheral electronic device and to receive second signals via said short distance wireless network from said peripheral electronic device, wherein said first signals are initially received by said unidirectional microphone, and wherein said second signals are output by said speaker after receipt by said wireless network module.

Claim 22 recites:

A speakerphone comprising:
a housing;
a speaker mounted to said housing;
a unidirectional microphone;
a sound processor coupled to said unidirectional microphone;
a portable power source coupled to said sound processor;
a microphone boom pivotably coupled to said housing, said microphone boom capable of being placed at a plurality of positions, said unidirectional microphone mounted at a distal end of said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in any of said plurality of positions; and
a Bluetooth enabled networking module adapted to transmit first signals to a Bluetooth enabled cellular telephone and to receive second signals from said Bluetooth enabled cellular telephone.

The specification of the subject application describes embodiments of a speakerphone. The speakerphone includes a housing, a speaker coupled to the housing, and a microphone (page 3, line 18 to page 4, line 6; figures 1-3). The microphone (see for example, reference numeral 107) has a lowest sensitivity and is aimed at the speaker (see for example, reference numeral 111), regardless of the position of the microphone boom (see for example, reference numeral 105) (column 4, lines 7-13).

In particular, examples of a speakerphone that includes a housing, a speaker coupled to said housing, a microphone boom pivotably coupled to said housing, said microphone boom having at least a first position and a second position, and a microphone mounted to said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in either said first position or said second position, are described at least on page 3, line 18 to page 4, line 6, and figures 1-3 of the specification.

Examples of a speakerphone that includes a housing, a speaker mounted to said housing, a unidirectional microphone, a microphone boom pivotably coupled to said housing, said microphone boom capable of being placed at a plurality of positions, said unidirectional microphone mounted at a distal end of said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in any of said plurality of positions, and a wireless networking module adapted to transmit first signals via a short distance wireless network to a peripheral electronic device and to receive second signals via said short distance wireless network from said peripheral electronic device, wherein said first signals are initially received by said unidirectional microphone, and wherein said second signals are output by said speaker after receipt by said wireless network module, are described at least on page 3, line 18 to page 4, line 6, page 6, lines 3-24, and figures 1-3 and 5 of the specification.

Examples of a speakerphone that includes a housing, a speaker mounted to said housing, a unidirectional microphone, a sound processor coupled to said unidirectional microphone, a portable power source coupled to said sound processor, a microphone boom pivotably coupled to said housing, said microphone boom capable of being placed at a plurality of positions, said unidirectional microphone mounted at a distal end of said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in any of said plurality of positions, and a Bluetooth enabled networking module adapted to transmit first signals to a Bluetooth enabled cellular telephone and to receive second signals from said Bluetooth enabled cellular telephone, are described at least on page 3, line 18 to page 4, line 6, page 6, lines 3-24, and figures 1-3 and 5 of the specification.

VI. ISSUE

The issues for this appeal are:

- (1) whether claims 1 and 2 are unpatentable under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,991,646 (“Frank”), and
- (2) whether claims 3-22 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Frank in view of U.S. Patent Application Publication No. 2004/0063456 (“Griffin”).

VII. ARGUMENTS

I. Claim Rejections under 35 U.S.C. §102

Claims 1 and 2 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,991,646 (“Frank”). Applicant respectfully traverses the rejection, and notes that in order to sustain a claim rejection under § 102, each of the claimed elements must be found, either expressly or inherently, in the cited reference.

Claim 1 recites a region of a microphone *having a lowest sensitivity*, wherein the region is *aimed at a speaker when a microphone boom is located in either said first position or said second position* (Emphasis Added). Frank does not disclose or suggest such limitations. Rather, Frank discloses a microphone arm 102 that is rotatably coupled to a casing 108 (column 3, lines 18-20). According to the Office Action, figure 5 of Frank allegedly discloses the above limitations. However, the cited passage of Frank does not disclose or suggest a microphone region *having a lowest sensitivity*, much less, a microphone region having a lowest sensitivity *that is aimed at a speaker when a microphone boom is located in either a first or a second position*. For at least the foregoing reasons, Applicant respectfully requests that the rejection for claims 1 and 2 be withdrawn.

II. Claim Rejections-35 U.S.C. §103

Claims 3-22 stand rejected under 35 U.S.C. §103(a) as being obvious over Frank in view of U.S. Patent Publication No. 2004/0063456 (“Griffin”). Applicant respectfully traverses the rejection.

Claims 3 and 22 recite a *unidirectional* microphone (Emphasis Added). As is known to one of ordinary skill in the art, a unidirectional microphone is significantly different from an omni-

directional microphone and bi-directional microphone in that a unidirectional microphone has only one axis of maximal sensitivity. On the other hand, an omni-directional microphone has the same sensitivity in all directions, and a bi-directional microphone has two axes of maximal sensitivity. See “Microphone Basics - Pickup Patterns” by Stephen Mackey, from the notaviva.com website, and “Polar Patterns Explained” from the dolphinmusic.co.uk website, both of which were entered in Applicant’s response dated September 25, 2006, and are attached herewith in the Evidence Appendix.

Frank and Griffin do not disclose or suggest a unidirectional microphone, as recited in claims 3 and 22. According to the Office Action, column 1, lines 32-33 of Frank allegedly discloses an “unidirectional microphone.” However, the cited passage merely discloses a microphone that is “sensitive,” and therefore, does not disclose or suggest an unidirectional microphone. Notably, the sensitivity of a microphone is independent of, and has nothing to do with, whether the microphone is unidirectional or not (i.e., a particular microphone may or may not be sensitive, regardless of whether it is unidirectional). Griffin also does not disclose a unidirectional microphone, and therefore, fails to make up the deficiency present in Frank. For at least the foregoing reason, Applicant respectfully requests that the rejection for claims 3 and 22, and their respective dependent claims, be withdrawn.

Claim 3 also recites a region of a microphone having a lowest sensitivity is aimed at a speaker when a microphone boom is located in any of said plurality of positions. Claim 22 recites similar limitations. As similarly discussed with reference to claim 1, Frank does not disclose or suggest such limitations. Griffin also does not disclose or suggest the above limitations, and therefore, fails to make up the deficiencies present in Frank. Since neither Frank nor Griffin discloses or suggests the above limitations, they cannot be combined to form the resulting subject matter of claims 3 and 22. For this additional reason, Applicant respectfully requests that the rejection for claims 3 and 22, and their respective dependent claims, be withdrawn.

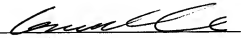
VIII. CONCLUSION

For at least the foregoing reasons, Applicant respectfully request that the Board of Patent Appeals and Interferences overrule the claim rejections, and find claims 1, 3, and 22, and their respective dependent claims, allowable.

Respectfully submitted,

Bingham McCutchen LLP

Dated: July 2, 2007

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APPENDIX A: Pending Claims

Listing of Appealed Claims

1. (Previously Presented) A speakerphone comprising:
 - a housing;
 - a speaker coupled to said housing;
 - a microphone boom pivotably coupled to said housing, said microphone boom having at least a first position and a second position; and
 - a microphone mounted to said microphone boom;
 - wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in either said first position or said second position.
2. (Previously Presented) The speakerphone of claim 1, wherein said speaker is located along an axis extending from said region of said microphone regardless of a position associated with said microphone boom.
3. (Previously Presented) A speakerphone comprising:
 - a housing;
 - a speaker mounted to said housing;
 - a unidirectional microphone;

a microphone boom pivotably coupled to said housing, said microphone boom capable of being placed at a plurality of positions, said unidirectional microphone mounted at a distal end of said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in any of said plurality of positions; and

a wireless networking module adapted to transmit first signals via a short distance wireless network to a peripheral electronic device and to receive second signals via said short distance wireless network from said peripheral electronic device, wherein said first signals are initially received by said unidirectional microphone, and wherein said second signals are output by said speaker after receipt by said wireless network module.

4. (Original) The speakerphone of claim 3, wherein said peripheral electronic device forwards said first signals via a long distance communication network and wherein said second signals are transmitted to said peripheral electronic device via said long distance communication network.

5. (Original) The speakerphone of claim 4, wherein said long distance communication network is a cellular telephone network.

6. (Original) The speakerphone of claim 3, wherein said peripheral electronic device is a cellular telephone.

7. (Original) The speakerphone of claim 3, wherein said wireless networking module is a Bluetooth enabled networking module and said peripheral electronic device is a Bluetooth enabled cellular telephone.

8. (Original) The speakerphone of claim 3, wherein said wireless networking module is a Bluetooth enabled networking module and wherein said peripheral electronic device further comprises a Bluetooth enabled adaptor.
9. (Original) The speakerphone of claim 3, wherein said wireless networking module is an IEEE802.11 enabled networking module and said peripheral electronic device is an IEEE802.11 enabled cellular telephone.
10. (Original) The speakerphone of claim 3, wherein said wireless networking module is an IEEE802.11 enabled networking module and wherein said peripheral electronic device further comprises an IEEE802.11 enabled adaptor.
11. (Original) The speakerphone of claim 3, further comprising at least one status indicator.
12. (Original) The speakerphone of claim 3, further comprising a display means coupled to said housing.
13. (Original) The speakerphone of claim 12, wherein said display means is capable of displaying at least one of battery level, signal level, volume level, call status, speakerphone status, pairing status, caller identification, time, elapsed time, date, phone history, phone lists, and calendar.

14. (Original) The speakerphone of claim 12, wherein said display means is capable of displaying a text message.
15. (Previously Presented) The speakerphone of claim 12, wherein said display means is selected from the group of display means consisting of liquid crystal displays, light emitting polymer displays, electroluminescent displays, active matrix electroluminescent displays, organic thin film transistor displays, active matrix organic light emitting diode displays, amorphous silicon integrated displays, and pliable display technology displays.
16. (Original) The speakerphone of claim 3, further comprising a sound processor.
17. (Original) The speakerphone of claim 3, further comprising a portable power source.
18. (Original) The speakerphone of claim 17, further comprising means for coupling an external power source to said speakerphone.
19. (Original) The speakerphone of claim 3, further comprising means for coupling a mounting bracket to said housing.
20. (Original) The speakerphone of claim 3, further comprising a power switch.
21. (Original) The speakerphone of claim 3, further comprising a volume control.

22. (Previously Presented) A speakerphone comprising:
- a housing;
 - a speaker mounted to said housing;
 - a unidirectional microphone;
 - a sound processor coupled to said unidirectional microphone;
 - a portable power source coupled to said sound processor;
 - a microphone boom pivotably coupled to said housing, said microphone boom capable of being placed at a plurality of positions, said unidirectional microphone mounted at a distal end of said microphone boom, wherein a region of said microphone having a lowest sensitivity is aimed at said speaker when said microphone boom is located in any of said plurality of positions; and
 - a Bluetooth enabled networking module adapted to transmit first signals to a Bluetooth enabled cellular telephone and to receive second signals from said Bluetooth enabled cellular telephone.
23. (Previously Presented) The speakerphone of claim 1, wherein the microphone comprises a unidirectional microphone.
24. (Previously Presented) The speakerphone of claim 1, wherein the microphone exhibits a cardioid polar pattern.
25. (Previously Presented) The speakerphone of claim 3, wherein the microphone exhibits a cardioid polar pattern.

26. (Previously Presented) The speakerphone of claim 3, wherein the microphone is most sensitive to sound arriving from only one direction.
27. (Previously Presented) The speakerphone of claim 22, wherein the microphone exhibits a cardioid polar pattern.
28. (Previously Presented) The speakerphone of claim 22, wherein the microphone is most sensitive to sound arriving from only one direction.

APPENDIX B: EVIDENCE APPENDIX

The evidence in this appendix was submitted by Applicant in a response to Office Action dated September 25, 2006, and was entered in the prosecution record.

notaviva

physics

Microphone Basics - Pickup Patterns

by Stephen Mackey

One of the most important characteristics of a microphone is its pickup pattern or directionality, which is way it responds to sound waves arriving from different directions. There are three basic patterns, omni, bi, and uni-directional.

Directional characteristics of a microphone are shown in polar coordinates on a graph called a polar plot. These measurements are taken by placing a mic on a turntable which rotates 360 degrees, with the diaphragm in the exact center of rotation. A loudspeaker is placed at some distance from the microphone and fed a fixed frequency steady signal. As the mic is rotated, a graphic level recorder registers the output level either in voltage or decibels relative to a fixed reference level. The graph of output level versus angle represents the directionality.

The amplitude (p) of any polar response may be described in general form by the polar equation:

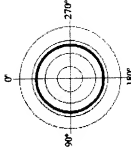
$$p = A + B \cos \theta \quad (\text{where } A + B = 1)$$

The specific values of A and B determine the actual shape of the response pattern.

Omni-directional

For omni-directional mics $A = 1$, therefore $B = 0$. Solving for p we see that the amplitude is constant regardless of the angle ($p = A$). Thus omni mics, as the name implies, pick up sound somewhat equally from all directions. Omni mics are classified as pressure mics, since sound pressure alone conveys no information about angular direction. A sound-pressure device simply reads pressure at a point in space without regard to orientation.

Omni mics have excellent low frequency response, are less susceptible to breath and wind noise, and have smoother frequency response than uni-directional mics.



Bi-directional (Figure Eight)

For bi-directional mics $A = 0$, therefore $B = 1$. Solving for p we see that the amplitude is proportional to the cosine function, which is 1 at 0 and 180 degrees, and 0 at 90 and 270 degrees. Thus bi-directional mics pick up sound from the front and rear, and reject sounds coming from the sides. These mics are classified as velocity mics, because the pattern responds to the air particle velocity information.

Bi-directional mics are used in recording and sound reinforcement applications where their pattern provides pick up for two adjacent sources.

Uni-directional (Cardioid)

When a pressure element is used in conjunction with a velocity element, a uni-directional pattern is derived. From the above equation, when $A = B = .5$, p solves as follows: 0 degrees $p = 1$, 90 and 270 degrees $p = .5$, and at 180 degrees $p = 0$. This results in a heart-shaped response pattern, thus the name cardioid, where sound is best picked up from the front (primary axis) and mostly rejected from the rear.

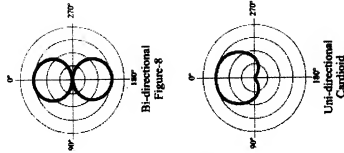
Cardioid mics are undoubtedly the most popular of all patterns, and are widely used in sound reinforcement and recording. Their response is not as sensitive to on axis and they are more sensitive to wind and breath noise. An inherent characteristic of uni-directional microphones is the proximity effect, which is an increase in the low frequency response when the mic is very close to the source.

References

"Sound Reinforcement Handbook" Gary Davis & Ralph Jones 1989

"The Microphone Handbook" John Eargle

Developed by Intertainment Technologies





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POLAR PATTERNS EXPLAINED

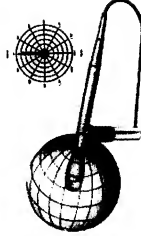
Directionality - The sensitivity to sound relative to the direction or angle of arrival at the microphone. Directionality is usually plotted on a graph referred to as a polar pattern.

The polar pattern shows the variation in sensitivity 360 degrees around the microphone, assuming that the microphone is in the center and 0 degrees represents the front or on-axis direction of the microphone.

There are a number of different directional patterns designed into microphones. The three basic patterns are omnidirectional, unidirectional, and bidirectional.

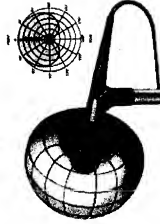
Omnidirectional Microphones

The omnidirectional microphone has equal response at all angles. Its coverage or pickup angle is a full 360 degrees. This type of microphone can be used if more room ambience is desired. For example, when using an omni, the balance of direct and ambient sound depends on the distance of the microphone from the instrument, and can be adjusted to the desired effect.



Unidirectional Microphones

The unidirectional microphone is most sensitive to sound arriving from one particular direction and is less sensitive at other directions. The

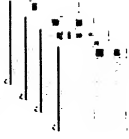


Omnidirectional

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most common type is a cardioid (heart-shaped) response. This has full sensitivity at 0 degrees (on-axis) and is least sensitive at 180 degrees (off-axis).

Unidirectional microphones are used to isolate the desired on-axis sound from unwanted off-axis sound. In addition, the cardioid mic picks up only about one-third as much ambient sound as an omni.

For example, the use of a cardioid microphone for a guitar amplifier, which is in the same room as the drum set, is one way to reduce the bleedthrough of drums on to the recorded guitar track. The mic is aimed toward the amplifier and away from the drums. If the undesired sound source is extremely loud (as drums often are), other isolation techniques may be necessary.

Both patterns offer narrower front pickup angles than the cardioid (115 degrees for the supercardioid and 105 degrees for the hypercardioid) and also greater rejection of ambient sound. While the cardioid is least sensitive at the rear (180 degrees off-axis), the least sensitive direction is at 125 degrees for the supercardioid and 110 degrees for the hypercardioid. When placed properly they can provide more focused pickup and less room ambience than the cardioid pattern, but they have less rejection at the rear: -12 dB for the supercardioid and only -6 dB for the hypercardioid.



Bidirectional Microphone

Supercardioid

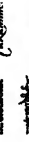
The bidirectional microphone has full response at both 0 degrees (front) and at 180 degrees (back). It has its least response at the sides. The coverage or pickup angle is only about 90 degrees at the front (or the rear). It has the same amount of ambient pickup as the cardioid.

This mic could be used for picking up two sound sources such as two vocalists facing each other. It is also used in certain stereo techniques.

Other directional-related microphone characteristics:

Ambient sound sensitivity - Since unidirectional microphones are less sensitive to off-axis sound than omnidirectional types, they pick up less overall ambient or room sound. Unidirectional mics should be used to control ambient noise pickup to get a cleaner recording.

Distance factor - Since directional microphones have more rejection of off-axis sound than omnidirectional types, they may be used at greater distances from a sound source and still achieve the same balance between the direct sound and background or ambient sound. An omnidirectional microphone will pick up more room (ambient) sound than a unidirectional microphone at the same distance. An omni should be placed closer to the sound source than a uni about half the distance - to pick up the same balance between direct sound and room sound.



Off-axis coloration - A microphone's frequency response may not be uniform at all angles. Typically, high frequencies are most affected, which may result in an unnatural sound for off-axis instruments or room ambience.

Proximity effect - For most unidirectional types, bass response increases as the microphone is moved closer to the sound source. When miking close with unidirectional microphones (less than 1 foot), be aware of proximity effect: it may help to roll off the bass until you obtain a more natural sound.

Understanding and choosing the frequency response and directivity of microphones are selective factors which can improve pickup of desired sound and reduce pickup of unwanted sound. This can greatly assist in achieving both natural sounding recordings and unique sounds for special applications.

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NEW POCKET-SIZED PORTABLE RECORDER FROM ZOOM

Following similar products from the likes of M-Audio and Edrol, Zoom have announced their own portable stereo recorder, the H4 'Handy' Recorder. The H4 has a similar range of features to its counterparts, with 24-bit/96kHz and MP3 recording capabilities, built-in stereo condenser mics and USB connections, for computer file-transfer.

NATIVE INSTRUMENTS ANNOUNCES AUDIO KONTROL 1

Native Instruments is excited to announce AUDIO KONTROL 1, a compact high performance USB 2.0 audio interface that addresses the typical needs of many musicians, producers and DJs in a highly portable and affordable package. Combining professional sound quality with high versatility, and equipped with a comprehensive software package, AUDIO KONTROL 1 was designed to meet a specific sweet spot in terms of performance, functionality and price.

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APPENDIX C: RELATED PROCEEDINGS APPENDIX

None